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(दूसरा पुनरीक्षण)

Indian Standard

LEAF SPRINGS ASSEMBLY CLIPS — SPECIFICATION

(Second Revision)

ICS 21.160

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 2004

Price Group 3

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Springs and Suspension Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was originally published in 1980 and revised in 1989. The second revision of the standard was undertaken as a result of further experience gained in the manufacture and use of the components and other developments in the field.

In the preparation of this standard, assistance has been derived from DIN 4621-1995 'Laminated leaf springs — Alignment clips', issued by the Deutsches Institut für Normung (DIN).

This standard covers various types of clips for leaf springs assembly. Type A clip is formed by rolling over the bottom most leaf spring and is most suitable for repair purposes. Type E clips are more useful for heavy duty application.

In this revision the following technical changes have been incorporated:

a) Table 1 is modified as given below:
    1) Dimensions of the widths regrouped.
    2) Tolerance '*C*' has been relaxed from ± 1 mm to +2 and –1 mm.
    3) Size d_1 is changed from 8.4 mm to 8.5 mm and 10.5 mm to 12.5 mm.
    4) Tolerance changed from H12 to H13.
    5) Tolerance on dimension '*D*' relaxed from ± 2 to ± 4.
    6) Thickness of clip section has been changed to:
        i) 6 mm for size 50 to 70 mm.
        ii) 8 mm for size 75 to 100 mm.
        iii) 10 mm for size above 100 to 120 mm.

b) Table 2 is modified as given below:
    1) Size of bolts have been changed as follows:
        i) Width size 50 to 70 mm from M 6 to M 8.
        ii) Width size 75 to 80 mm from M 8 to M 12.
        iii) Width size 90 to 120 mm from M 10 to M 12.
    2) Size of the spacers for all the sizes have been changed
    3) Rivets have been mentioned as only one size as follows (single rivet system):
       They are:
        i) 40 to 70 mm from 6, 8, 10 mm sizes to 10 mm only.
        ii) 75 to 120 mm from 10 mm to 12 mm.

The composition of the Committee responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LEAF SPRINGS ASSEMBLY CLIPS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the dimensions and other technical requirements for clips for leaf springs assembly.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1363	Hexagon head bolts, screws and nuts of product grade C:
(Part 1) : 1992	Hexagon head bolts (size range M5 to M64) (*third revision*)
(Part 3) : 1992	Hexagon nuts (size range M5 to M64) (*third revision*)
1364	Hexagon head bolts, screws and nuts of product Grades A and B
(Part 1) : 1992	Hexagon head bolts (size range M1.6 to M64) (*third revision*)
(Part 3) : 1992	Hexagon nuts (size range M1.6 to M64) (*third revision*)
1821 : 1987	Dimensions for clearance holes for bolts and screws (*third revision*)
2062 : 1999	Steel for general structural purposes — Specification (*fifth revision*)
2155 : 1982	Specification for cold forged solid steel rivets for hot closing (6 to 16 mm diameter) (*first revision*)
3406 (Part 1) : 1986	Dimensions for countersinks and counterbores : Part 1 Countersinks (*second revision*)
5429 : 1979	Dimensions for steel tubes for automotive purposes (*first revision*)
8500 : 1991	Structural steel — Microalloyed (medium and high strength qualities) — Specification (*first revision*)

3 DIMENSIONS

3.1 Dimensions shall be as given in Tables 1 and 2 read with Fig. 1.

3.2 Clips of types A, B, C, D and E may also be fixed to the leaf spring by means of two rivets as shown in Fig. 1, Type F.

3.3 An alternative shape of clips is also shown in Fig. 1.

3.4 Dimensions for other parts not included in the supply shall be as specified in Table 2. The sizes shown are the minimum.

3.5 Dimensions for other parts belonging to the clips for springs with centre nibbing arrangement shall be as specified in Table 3.

3.6 All the dimensions apply when fitted. In the case of clips that are not fitted, there is an opening angle of 1° to 3° for each leg.

4 DESIGNATION

The designation shall include type of clip, nominal width, nominal length, number of holes for rivets (if applicable) and number of this Indian Standard.

4.1 Designation of a clip of Type C for leaf springs shall include width b, length and number of holes for rivets.

Example:

A clip of Type C for leaf spring having width, $b = 80$ mm with a length, $l = 50$ mm ($h + 13$) and 1 hole for rivet shall be designated as:

Clip C80 × 50 IS 9574 : 2004

4.2 Designation of a clip of Type D for leaf spring shall include width, b and length, l.

Example:

A clip of Type D for leaf spring having width, $b = 40$ mm with a length, $l = 25$ mm ($h + 13$) shall be designated as:

Clip D40 × 25 IS 9574 : 2004

4.2.1 A cross strap (cross piece) for the clip of Type D, with two holes for rivets shall be designated as:

Cross Piece D40 – 2 IS 9574 : 2004

4.3 Designation of a clip of Type E, for leaf spring shall include width, b and length, l.

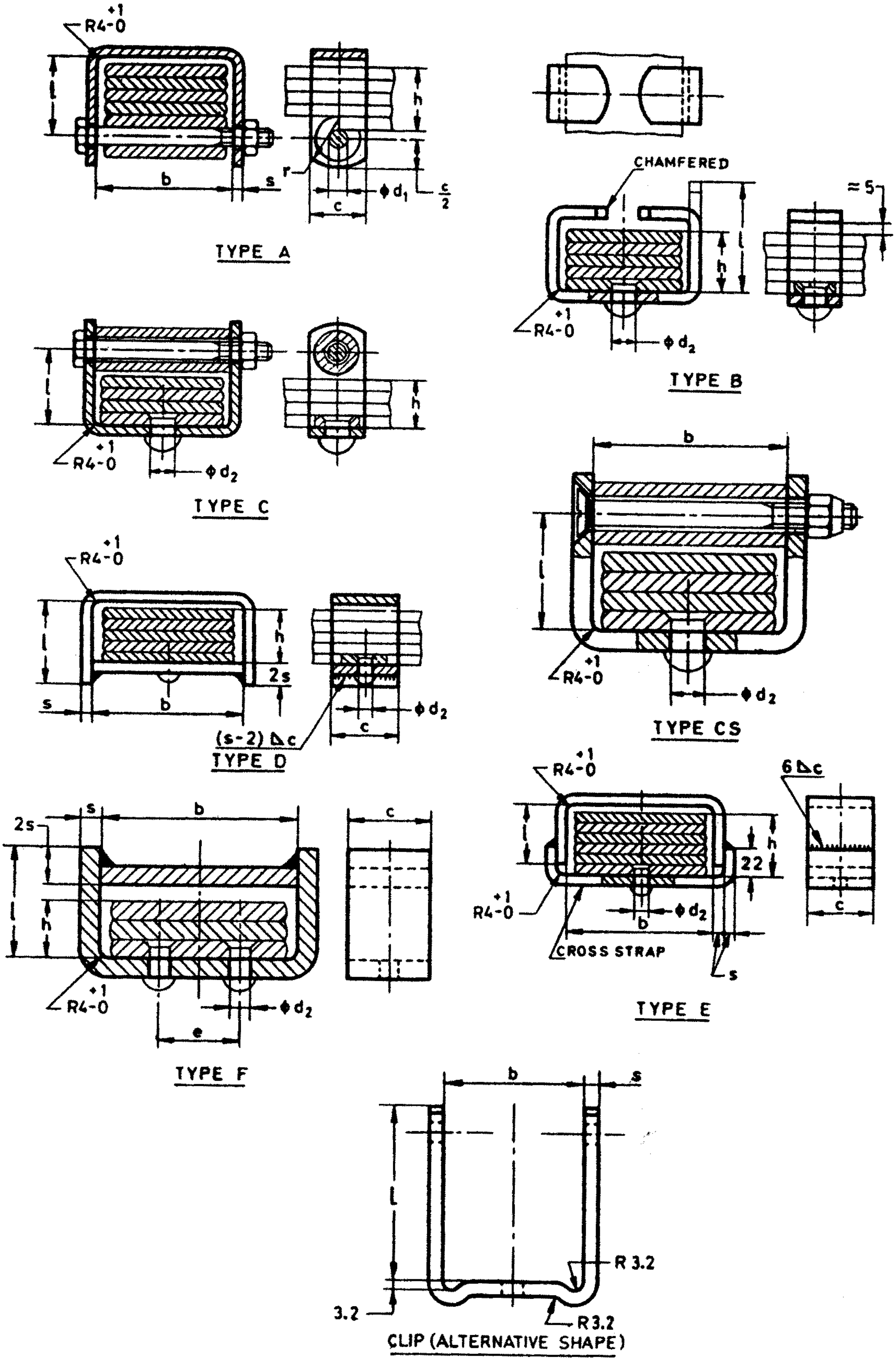

Fig. 1 Dimensions of Spring Clips

Table 1 Dimensions of Spring Clips

(*Clause* 3.1)

All dimensions in millimetres.

Sl No.	For Leaf Springs Widths	b ±0.5	C +2 -1	d_1 ±0.3	d_2 H13	d_3 H13	e ± 0.2	I for Clamp Type							
								A ± 1	B ±2	C ±1	CS ±1	D ±4	E ±1	r	S
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
i)	40	43	20	6.4	8.4	-	-	H+7	h+23	h+8	-	H+13	-	20	4
ii)	50	53	25	8.5	11	-	-	h+9	h+26	h+10.5	h+10.5	h+17	-	20	6
iii)	60	63				8.4	30		h+30						
iv)	65	68							h+32						
v)	70	73							h+34						
vi)	75	79	35	12.5	13			h+11	-	h+13	h+13	h+21	h+2	35	8
vii)	80	84													
viii)	90	94													
ix)	100	104					40								
x)	120	124	40									h+25			10

NOTES

1 For d_2 countersunk, details shall be conforming to IS 3406 (Part 1).

2 Clearance holes d_1 shall be conforming to IS 1821.

Table 2 Parts Belonging to the Spring Clips that are not Included in the Supply

(*Clauses* 3.1 *and* 3.4)

All dimensions in millimetres.

Sl No. (1)	For Leaf Spring Widths (2)	Bolts According to IS 1363 (Part 1) and IS 1364 (Part 1) (3)	Nuts According to IS 1363 (Part 3) and IS 1364 (Part 3) (4)	Spacer According to IS 5429 Outer Diameter X Thickness X Length (5)	Tolerance of Length of the Spacer (6)	Rivet According to IS 2155 (7)	2 Rivets According to IS 2155 (8)
i)	40	M6 × 60	M6	10 × 1.5 × 43	± 0.5	1 × 10 × length	1 × 8 × length
ii)	50	M8 × 75	M8	12 × 1.5 × 53			-
iii)	60	M8 × 90		12 × 1.5 × 63			2 × 8 × length
iv)	65	M8 × 90		12 × 1.5 × 68			
v)	70	M8 × 100		12 × 1.5 × 73			
vi)	75	M12 × 110	M12	18 × 2.0 × 79		1 × 12 × length	
vii)	80	M12 × 120		18 × 2.0 × 84			
viii)	90	M12 × 130		18 × 2.0 × 94			
ix)	100	M12 × 140		18 × 2.0 × 104			
x)	120	M12 × 160		18 × 2.0 × 124			

NOTES

1 Spacers may also be manufactured from sheets having corresponding suitable material and thickness.

2.Rivet length = thickness of spring leaf + S + C, where C = a constant depending on rivet diameter and countersunk details of spring leaf.

Table 3 Parts Belonging to the Spring Clips for Springs with Centre Nibbing Arrangement

(*Clauses* 3.5)

All dimensions in millimetres.

Sl No. (1)	For Leaf Spring Widths (2)	Bolts According to IS 1363 (Part 1) (3)	Spacer According to IS 5429 (4)	Rivets According to IS 2155 (5)
i)	Up to and including 50	M8	12 × 1.5	8 One fitted
ii)	Above 50 and including 70	M10	12 × 1.5	10 One fitted
iii)	Above 75 and including 120	M10 or M12	12 × 1.5 for or 18 × 2.0 for M12	8-2 fitted or 10-2 fitted or 12-2 fitted

NOTES

1 Spacer length equals upper limit of leaf width ± 0.25.

2 Rivet length = Thickness of leaf spring + S +C, where C = a constant depending on rivet diameter and countersunk details of spring leaf.

Example:

A clip of Type E, for leaf spring having width, b = 100 mm and length, l = 42 mm (h + 2) shall be designated as:

Clip E 100 X 42 Fe 490 IS 9574 : 2004

4.3.1 A bent cross piece for the clip of Type E with 2 holes for rivets shall be designated as:

Cross Piece E 100-2 Fe 490 IS 9574:2004

5 MATERIAL

Steel conforming to IS 2062. Steel conforming to Designation Fe 540W of IS 8500, may also be used for welded types, where required.

6 MARKING

6.1 Each clip shall be legibly and indelibly marked with the following:

a) Manufacturer's name or trade-mark, if any;
b) Designation;
c) Batch no; and
d) Month/Year of manufacture.

6.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

6.2.1 The use of Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to the manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Automotive Springs and Suspension Systems Sectional Committee, TED 21

Organization	*Representative(s)*
Tata Motors Ltd, Jamshedpur	Shri A. G. Pradhan (***Chairman***) Shri K. Gopalakrishna (*Alternate*)
Akal Springs Pvt Ltd, Ludhiana	General Manager
All India Springs Manufacturers Association, Mumbai	Shri A. A. Mirchandani
Ashok Leyland Ltd, Chennai	Shri Appalaraju Shri U. Jaikrishna (*Alternate*)
Association of State Road Transport Undertakings, New Delhi	Shri A. S. Lakra Shri P. M. Phate (*Alternate*)
Central Institute of Road Transport, Pune	Shri N. R. Kachare Shri P. S. Munoli (*Alternate*)
Central Mechanical Engineering Research Institute, Durgapur	Dr J. Basu Dr T.K. Paul (*Alternate*)
Conventry Springs & Engineering Co Pvt Ltd, Kolkata	Shri A. Bafna Shri A. S. Kohli (*Alternate*)
Controllerate of Quality Assurance (CQA) (OFV) Vehicle Factory, Jabalpur	General Manager
Gabriel India Ltd, Mumbai	Shri K. Sundaraman Shri S. K. Bhaumick (*Alternate*)
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Research Designs & Standards Organization, Lucknow	Joint Director (Standards) Assistant Design Engineer
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Upper India Steel Manufacturing & Engineering Co Ltd, Ludhiana	Shri R. P. Engira
Vehicle Factory, Jabalpur	Shri M. K. Mishra Shri R. Lodwal (*Alternate*)
BIS Directorate General	Shri K. K. Vashistha, Director & Head (TED) [Representing Director General (*Ex-officio*)]

Member-Secretary
Shri P. K. Sharma
Director (TED), BIS

Bureau of Indian Standards

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